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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/721,827

11/26/2003

Heber MacMahon

245430US-20

4777

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7590

06/10/2009

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ALEXANDRIA, VA 22314

EXAMINER

LAMPRECHT, JOEL

ART UNIT

PAPER NUMBER

3737

NOTIFICATION DATE

DELIVERY MODE

06/10/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/721,827	<b>Applicant(s)</b> MACMAHON ET AL.	
	<b>Examiner</b> JOEL M. LAMPRECHT	<b>Art Unit</b> 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-19 and 21-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-19, 21-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11, 13-19, and 21-39 rejected under 35 U.S.C. 103(a) as being unpatentable over Sheehan et al (US 5,570,430) in view of Uppaluri et al (US 2003/0215119) and Jabri et al (2003/0152258). Sheehan et al disclose a method for obtaining subtraction images during a time-elapsd diagnostic procedure including the extraction of features from the subtraction images (Col 9 Line 25-Col 10 Line 40), display and storage of images (Col 6 Line 60-64, Col 12 Line 5-40), the use of histograms and binary image extraction from a gray level mapping of the area (Col 10 Line 5-25, Col , extraction of feature vectors (Col 10 Line 5-45), training of a

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classification algorithm for identification of disease states of tissues (Col 10 line 44-Col 11 Line 35, Col 11 Line 50-Col 14 Line 65)).

Sheehan et al discloses all that is listed above, but fails to disclose dual-energy bone/soft tissue methods artifact determination versus determination of pathological change, and display of diagnostic symbols over the images. Attention is directed to the secondary reference to Uppaluri et al which discloses the use of dual energy images for diagnosis (Abs), including the separation of bone/soft tissue images from high/low energy images (0032, 0023-0026), identification of artifacts versus pathological features (0023-0025), display and highlighting of images (0025-0031), and segmentation/classification of regions of interest using an algorithm (0033-0035). It would have been obvious to one of ordinary skill at the time of the invention to have utilized the devices of Uppaluri et al for the analysis and dual-energy captures with those methods of Sheehan et al for subtraction processing in order to extract features to identify fractures, disease, obstructions or other relevant medical conditions with minimal noise (Abs).

Sheehan et al in view of Uppaluri et al disclose all that is listed above, but fail to disclose the use of shift vectors (although Sheehan et al disclose the use of shifts in features to identify regions of interest). Attention is paid to the teaching reference to Jabri et al in the same area of endeavor which discloses use of shift vectors (0040-0049) for use in dual energy chest radiography with subtraction decompositions (CIm 26). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the methods of Jabri et al for the registration and improved

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accuracy of image display in those of Sheehan et al in view of Uppaluri et al for the purpose of facilitating an automated, computer controlled identification of areas of particular medical relevance in dual-energy chest x-rays (Abs, 0008).

### ***Response to Arguments***

Applicant's arguments with respect to claims 1, 13, 21 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure includes those documents listed on the reference cited list attached to this action. These references further teachings of dual-energy images, automated classification, diagnostic automation, and subtraction imaging for features of medical interest.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL M. LAMPRECHT whose telephone number is (571)272-3250. The examiner can normally be reached on 8:30-5:00 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/  
Supervisory Patent Examiner, Art  
Unit 3737

JML